

October 04, 2016

Meagan E. Ormand
Golder Associates Inc.
2108 W. Laburnum Ave.
Suite 200
Richmond, VA 23227

RE: Project: Bremo Weekly Process
Pace Project No.: 92314396

Dear Meagan Ormand:

Enclosed are the analytical results for sample(s) received by the laboratory on September 30, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
Project Manager

Enclosures

cc: Ron DiFrancesco, Golder Associates Inc.
Martha Smith, Golder Associates Inc.
Mike Williams, Golder Associates Inc



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Bremo Weekly Process
Pace Project No.: 92314396

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074

Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Wyoming Certification: FL NELAC Reciprocity
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

Charlotte Certification IDs

9800 Kinney Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

Eden Certification IDs

205 East Meadow Road Suite A, Eden, NC 27288
North Carolina Drinking Water Certification #: 37738

North Carolina Wastewater Certification #: 633
Virginia/VELAP Certification #: 460025

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Bremo Weekly Process

Pace Project No.: 92314396

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92314396001	T4-160928-1242-S3	SM 2540D	KCE	1	PASI-E
		EPA 350.1 1993 Rev 2.0	KCE	1	PASI-E
		SM 4500-Cl-E-2011	KCE	1	PASI-E
		EPA 1664B	JMS	1	PASI-C
		EPA 200.7	CKJ	1	PASI-O
		Trivalent Chromium Calculation	HEA	1	PASI-O
		EPA 200.8	DRS	10	PASI-O
		EPA 245.1	WAB	1	PASI-A
		EPA 218.7	AEM	1	PASI-O

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Bremo Weekly Process

Pace Project No.: 92314396

Method: SM 2540D

Description: 2540D TSS, Low-Level, Eden

Client: Golder_Dominion_Bremo

Date: October 04, 2016

General Information:

1 sample was analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Bremo Weekly Process

Pace Project No.: 92314396

Method: EPA 350.1 1993 Rev 2.0

Description: 350.1 Ammonia

Client: Golder_Dominion_Bremo

Date: October 04, 2016

General Information:

1 sample was analyzed for EPA 350.1 1993 Rev 2.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process

Pace Project No.: 92314396

Method: SM 4500-Cl-E-2011

Description: 4500 Chloride

Client: Golder_Dominion_Bremo

Date: October 04, 2016

General Information:

1 sample was analyzed for SM 4500-Cl-E-2011. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process

Pace Project No.: 92314396

Method: EPA 1664B

Description: HEM, Oil and Grease

Client: Golder_Dominion_Bremo

Date: October 04, 2016

General Information:

1 sample was analyzed for EPA 1664B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process

Pace Project No.: 92314396

Method: EPA 200.7

Description: 200.7 MET ICP

Client: Golder_Dominion_Bremo

Date: October 04, 2016

General Information:

1 sample was analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process

Pace Project No.: 92314396

Method: Trivalent Chromium Calculation

Description: Trivalent Chromium Calculation

Client: Golder_Dominion_Bremo

Date: October 04, 2016

General Information:

1 sample was analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process

Pace Project No.: 92314396

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: Golder_Dominion_Bremo

Date: October 04, 2016

General Information:

1 sample was analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Bremo Weekly Process

Pace Project No.: 92314396

Method: EPA 245.1

Description: 245.1 Mercury

Client: Golder_Dominion_Bremo

Date: October 04, 2016

General Information:

1 sample was analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Bremo Weekly Process
Pace Project No.: 92314396

Method: EPA 218.7
Description: Hexavalent Chromium by IC
Client: Golder_Dominion_Bremo
Date: October 04, 2016

General Information:

1 sample was analyzed for EPA 218.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 323008

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92313416004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1720251)
 - Chromium, Hexavalent
- MSD (Lab ID: 1720252)
 - Chromium, Hexavalent

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Bremo Weekly Process

Pace Project No.: 92314396

Sample: T4-160928-1242-S3		Lab ID: 92314396001		Collected: 09/28/16 12:42		Received: 09/30/16 13:50		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
2540D TSS, Low-Level, Eden		Analytical Method: SM 2540D							
Total Suspended Solids	ND	mg/L	1.0	1		10/03/16 13:34			
350.1 Ammonia		Analytical Method: EPA 350.1 1993 Rev 2.0							
Nitrogen, Ammonia	ND	mg/L	0.20	1		10/03/16 14:30	7664-41-7		
4500 Chloride		Analytical Method: SM 4500-Cl-E-2011							
Chloride	33.3	mg/L	5.0	5		10/03/16 15:03	16887-00-6		
Field Data		Analytical Method:							
Collected By	L. Hamelman			1		09/28/16 12:50			
Collected Date	09/28/16			1		09/28/16 12:50			
Collected Time	12:42			1		09/28/16 12:50			
Field pH	7.8	Std. Units	0.10	1		09/28/16 12:50			
HEM, Oil and Grease		Analytical Method: EPA 1664B							
Oil and Grease	ND	mg/L	5.0	1		10/04/16 06:36			
200.7 MET ICP		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Tot Hardness asCaCO3 (SM 2340B	173000	ug/L	3300	1	10/01/16 14:06	10/03/16 12:47			
Trivalent Chromium Calculation		Analytical Method: Trivalent Chromium Calculation							
Chromium, Trivalent	ND	ug/L	5.0	1		10/03/16 16:08	16065-83-1		
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony	ND	ug/L	5.0	1	10/01/16 14:06	10/03/16 12:35	7440-36-0		
Arsenic	53.8	ug/L	5.0	1	10/01/16 14:06	10/03/16 12:35	7440-38-2		
Cadmium	ND	ug/L	1.0	1	10/01/16 14:06	10/03/16 12:35	7440-43-9		
Copper	ND	ug/L	5.0	1	10/01/16 14:06	10/03/16 12:35	7440-50-8		
Lead	ND	ug/L	5.0	1	10/01/16 14:06	10/03/16 12:35	7439-92-1		
Nickel	ND	ug/L	5.0	1	10/01/16 14:06	10/03/16 12:35	7440-02-0		
Selenium	ND	ug/L	5.0	1	10/01/16 14:06	10/03/16 12:35	7782-49-2		
Silver	ND	ug/L	0.40	1	10/01/16 14:06	10/03/16 12:35	7440-22-4		
Thallium	ND	ug/L	1.0	1	10/01/16 14:06	10/03/16 12:35	7440-28-0		
Zinc	ND	ug/L	25.0	1	10/01/16 14:06	10/03/16 12:35	7440-66-6		
245.1 Mercury		Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	ND	ug/L	0.10	1	10/03/16 12:52	10/03/16 15:23	7439-97-6		
Hexavalent Chromium by IC		Analytical Method: EPA 218.7							
Chromium, Hexavalent	ND	ug/L	1.0	1		10/03/16 14:09	18540-29-9		

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QUALITY CONTROL DATA

Project: Bremo Weekly Process

Pace Project No.: 92314396

QC Batch: 331519

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D TSS, Low Level, Eden

Associated Lab Samples: 92314396001

METHOD BLANK: 1836866

Matrix: Water

Associated Lab Samples: 92314396001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	10/03/16 13:33	

LABORATORY CONTROL SAMPLE: 1836867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	250	240	96	90-110	

SAMPLE DUPLICATE: 1836868

Parameter	Units	92314399001 Result	Dup Result	RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Bremo Weekly Process

Pace Project No.: 92314396

QC Batch: 331488

Analysis Method: EPA 350.1 1993 Rev 2.0

QC Batch Method: EPA 350.1 1993 Rev 2.0

Analysis Description: 350.1 Ammonia, EDEN

Associated Lab Samples: 92314396001

METHOD BLANK: 1836560

Matrix: Water

Associated Lab Samples: 92314396001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.20	10/03/16 12:30	

LABORATORY CONTROL SAMPLE: 1836561

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.2	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1836562 1836563

Parameter	Units	92314399001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Nitrogen, Ammonia	mg/L	ND	5	5	5.2	5.3	103	105	90-110	1	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process

Pace Project No.: 92314396

QC Batch:	331530	Analysis Method:	SM 4500-Cl-E-2011
QC Batch Method:	SM 4500-Cl-E-2011	Analysis Description:	4500 Chloride, EDEN
Associated Lab Samples:	92314396001		

METHOD BLANK: 1836917 Matrix: Water
Associated Lab Samples: 92314396001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	10/03/16 14:52	

LABORATORY CONTROL SAMPLE: 1836918

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	10	10.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1836919 1836920

Parameter	Units	92314399001 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
			Spike Conc.	Spike Conc.							
Chloride	mg/L	34.8	10	10	45.0	44.2	102	94	90-110	2	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92314396

QC Batch:	331638	Analysis Method:	EPA 1664B
QC Batch Method:	EPA 1664B	Analysis Description:	1664 HEM, Oil and Grease
Associated Lab Samples:	92314396001		

METHOD BLANK: 1837420 Matrix: Water
Associated Lab Samples: 92314396001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Oil and Grease	mg/L	ND	5.0	10/04/16 06:36	

LABORATORY CONTROL SAMPLE: 1837421

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	40	36.7	92	78-114	

MATRIX SPIKE SAMPLE: 1837422

Parameter	Units	92314396001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	ND	40	34.4	86	78-114	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92314396

QC Batch:	331506	Analysis Method:	EPA 245.1
QC Batch Method:	EPA 245.1	Analysis Description:	245.1 Mercury
Associated Lab Samples:	92314396001		

METHOD BLANK: 1836772 Matrix: Water
Associated Lab Samples: 92314396001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.10	10/03/16 15:19	

LABORATORY CONTROL SAMPLE: 1836773

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.4	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1836799 1836800

Parameter	Units	92314396001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Mercury	ug/L	ND	2.5	2.5	2.1	2.1	82	83	70-130	0	

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92314396

QC Batch:	323807	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 MET
Associated Lab Samples:	92314396001		

METHOD BLANK: 1726233 Matrix: Water
Associated Lab Samples: 92314396001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	ND	3300	10/03/16 12:15	

LABORATORY CONTROL SAMPLE: 1726234

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	82700	80200	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1726235 1726236

Parameter	Units	35266808001		MS		MSD		MS		MSD		% Rec		RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits					
Tot Hardness asCaCO3 (SM 2340B	ug/L	155 mg/L	82700	82700	236000	230000	98	90	70-130	3					

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92314396

QC Batch: 323808 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 92314396001

METHOD BLANK: 1726239 Matrix: Water
Associated Lab Samples: 92314396001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	10/03/16 11:52	
Arsenic	ug/L	ND	5.0	10/03/16 11:52	
Cadmium	ug/L	ND	1.0	10/03/16 11:52	
Copper	ug/L	ND	5.0	10/03/16 11:52	
Lead	ug/L	ND	5.0	10/03/16 11:52	
Nickel	ug/L	ND	5.0	10/03/16 11:52	
Selenium	ug/L	ND	5.0	10/03/16 11:52	
Silver	ug/L	ND	0.40	10/03/16 11:52	
Thallium	ug/L	ND	1.0	10/03/16 11:52	
Zinc	ug/L	ND	25.0	10/03/16 11:52	

LABORATORY CONTROL SAMPLE: 1726240

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	46.3	93	85-115	
Arsenic	ug/L	50	48.3	97	85-115	
Cadmium	ug/L	5	4.9	98	85-115	
Copper	ug/L	50	51.8	104	85-115	
Lead	ug/L	50	47.2	94	85-115	
Nickel	ug/L	50	50.7	101	85-115	
Selenium	ug/L	50	49.2	98	85-115	
Silver	ug/L	5	4.9	99	85-115	
Thallium	ug/L	50	48.0	96	85-115	
Zinc	ug/L	250	251	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1726241 1726242

Parameter	Units	35267527001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Antimony	ug/L	0.50J	50	50	46.2	47.5	91	94	70-130	3	
Arsenic	ug/L	1.1	50	50	48.9	49.5	96	97	70-130	1	
Cadmium	ug/L	0.050U	5	5	4.6	5.0	91	99	70-130	9	
Copper	ug/L	2.0	50	50	50.0	52.5	96	101	70-130	5	
Lead	ug/L	0.50U	50	50	47.9	48.9	96	98	70-130	2	
Nickel	ug/L	1.8	50	50	50.2	51.7	97	100	70-130	3	
Selenium	ug/L	0.50U	50	50	46.1	46.9	92	93	70-130	2	
Silver	ug/L	0.050U	5	5	4.7	4.9	95	99	70-130	4	
Thallium	ug/L	0.50U	50	50	49.0	50.1	98	100	70-130	2	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Bremo Weekly Process

Pace Project No.: 92314396

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1726241 1726242											
Parameter	Units	35267527001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Zinc	ug/L	34.5	250	250	264	276	92	97	70-130	4	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1726243 1726244											
Parameter	Units	92314399001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Antimony	ug/L	ND	50	50	51.6	51.2	94	93	70-130	1	
Arsenic	ug/L	53.6	50	50	104	103	101	100	70-130	0	
Cadmium	ug/L	ND	5	5	4.8	4.7	95	95	70-130	0	
Copper	ug/L	ND	50	50	49.8	49.5	99	98	70-130	0	
Lead	ug/L	ND	50	50	49.6	49.0	99	98	70-130	1	
Nickel	ug/L	5.2	50	50	51.3	51.2	92	92	70-130	0	
Selenium	ug/L	ND	50	50	48.6	49.2	95	97	70-130	1	
Silver	ug/L	ND	5	5	4.8	4.8	97	96	70-130	0	
Thallium	ug/L	ND	50	50	51.0	50.4	102	100	70-130	1	
Zinc	ug/L	ND	250	250	240	240	95	95	70-130	0	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Bremo Weekly Process
Pace Project No.: 92314396

QC Batch:	323008	Analysis Method:	EPA 218.7
QC Batch Method:	EPA 218.7	Analysis Description:	Chromium, Hexavalent IC
Associated Lab Samples:	92314396001		

METHOD BLANK: 1720249 Matrix: Water
Associated Lab Samples: 92314396001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	ug/L	ND	1.0	10/03/16 12:51	

LABORATORY CONTROL SAMPLE: 1720250

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	ug/L	.075	.068J	91	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1720251 1720252

Parameter	Units	92313416004 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
Chromium, Hexavalent	ug/L	0.69	.38	.38	1J	1J	84	82	85-115	1	M1

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: Bremo Weekly Process
Pace Project No.: 92314396

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte
PASI-E	Pace Analytical Services - Eden
PASI-O	Pace Analytical Services - Ormond Beach

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE


Project: Bremo Weekly Process

Pace Project No.: 92314396

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92314396001	T4-160928-1242-S3	SM 2540D	331519		
92314396001	T4-160928-1242-S3	EPA 350.1 1993 Rev 2.0	331488		
92314396001	T4-160928-1242-S3	SM 4500-CI-E-2011	331530		
92314396001	T4-160928-1242-S3				
92314396001	T4-160928-1242-S3	EPA 1664B	331638		
92314396001	T4-160928-1242-S3	EPA 200.7	323807	EPA 200.7	323887
92314396001	T4-160928-1242-S3	Trivalent Chromium Calculation	324063		
92314396001	T4-160928-1242-S3	EPA 200.8	323808	EPA 200.8	323889
92314396001	T4-160928-1242-S3	EPA 245.1	331506	EPA 245.1	331531
92314396001	T4-160928-1242-S3	EPA 218.7	323008		

REPORT OF LABORATORY ANALYSIS

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	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: May 24, 2016 Page 1 of 2
	Document No.: F-MEC-CS-009-Rev.03	Issuing Authority: Pace Mechanicsville Quality Office

Sample Condition Upon Receipt

Client Name:

Golder

Project:

WO# : 92314396



Courier: ☐ Commercial ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☒ Pace ☐ Other: _____

Custody Seal Present? ☒ Yes ☐ No Seals Intact? ☒ Yes ☐ No

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other: _____

Thermometer: ☒ RMD001 ☐ _____ Type of Ice: ☒ Wet ☐ Blue ☐ None

Correction Factor: 0.0°C Cooler Temp Corrected (°C): 2.7 Biological Tissue Frozen? ☐ Yes ☐ No ☐ N/A

Temp should be above freezing to 6°C

USDA Regulated Soil (☐ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

			Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.	
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.	Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Includes Date/Time/ID/Analysis Matrix: <u>WW</u>			
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.	HNC3 pH<2 HCl pH<2 H2SO4 pH<2 NaOH pH>12 NaOH/ZnOAc pH>9
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Samples checked for dechlorination?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	12.	
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.	
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):			

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____
Comments/Sample _____
Discrepancy: _____

Date/Time: _____

Project Manager SCURF Review: NMG

Date: 9/3/16

Project Manager SRF Review: NMG

Date: 10/3/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section B Required Project Information: Report To: MORMAND@golder.com Copy To: Martha_Smith@golder.com Purchase Order No.: Project Name: Brema Weekly Process Project Number: 1520-347.2.20		Section C Invoice Information: Attention: Meagan Ormand Company Name: Golder Associates Address: galapdataentry_invoices@golder.com Pace Quote Reference: Pace Project Manager: Pace Profile #:	
2108 W Laburnum Ave, Ste 200 Richmond, VA 23227 MORMAND@golder.com 551-0129 Fax: 804-358-2900 Due Date/TAT: 3-2-2020		REGULATORY AGENCY NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER <input type="checkbox"/> Site Location: VA STATE:	

Valid Matrix Codes		COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)		MATRIX CODE (see valid codes to left)		RELINQUISHED BY / AFFILIATION		DATE		ADDITIONAL COMMENTS	
MATRIX	CODE	COMPOSITE START	COMPOSITE END/GRAB	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME	DATE	TIME
DRINKING WATER	DW												
WASTE WATER	WW												
PRODUCT	P												
SOIL/SOLID	SL												
OIL	OL												
WIPE	WP												
WASTE	WT												
OTHER	OT												
TISSUE	TS												

Sample ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE 14-160928-1242-53		Preservatives H ₂ SO ₄ <input checked="" type="checkbox"/> HNO ₃ <input checked="" type="checkbox"/> HCl <input checked="" type="checkbox"/> NaOH <input checked="" type="checkbox"/> Na ₂ S ₂ O ₃ <input checked="" type="checkbox"/> Methanol <input checked="" type="checkbox"/> Other <input checked="" type="checkbox"/>		# OF CONTAINERS 10		SAMPLE TEMP AT COLLECTION 12:42		ANALYSIS TEST 200.8 - Sb, As, Cd, Cr (III) <input checked="" type="checkbox"/> 200.8 - Pb, Ni, Se, Zn, Cu <input checked="" type="checkbox"/> 200.8 - Ag, Th <input checked="" type="checkbox"/> 245.1 - Hg <input checked="" type="checkbox"/> 218.6(7) - Cr (VI) <input checked="" type="checkbox"/> SM4500 - Chloride <input checked="" type="checkbox"/> 1664B - Oil & Grease <input checked="" type="checkbox"/> 350.1 - Ammonia-N <input checked="" type="checkbox"/> SM2540D - TSS <input checked="" type="checkbox"/> 200.7 - Hardness <input checked="" type="checkbox"/>		Residual Chlorine (Y/N) <input type="checkbox"/>		Pace Project No./ Lab I.D. 92314396		pH analysis @ 12:50 : pH = 7.3	
--	--	--	--	-----------------------	--	------------------------------------	--	--	--	--	--	--	--	--------------------------------	--

SAMPLER NAME AND SIGNATURE		PRINT Name of SAMPLER:		SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YYYY):	
Golder 9/30/16 1350 9/30/16 328 Rachel Burruss		L. Hume		05/28/16		05/28/16	